Complete Summary

GUIDELINE TITLE

Venous thromboembolism prophylaxis for surgical/trauma patients.

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Venous thromboembolism prophylaxis for surgical/trauma patients. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2003 Oct. 39 p. [115 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Venous thromboembolism

GUIDELINE CATEGORY

Prevention
Risk Assessment

CLINICAL SPECIALTY

Anesthesiology
Emergency Medicine
Family Practice
Hematology
Internal Medicine
Orthopedic Surgery
Preventive Medicine

Pulmonary Medicine
Surgery

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Care Providers
Health Plans
Hospitals
Managed Care Organizations
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To increase the percentage of adult hospitalized surgical patients (18 years and older) who are appropriately screened for venous thromboembolism risk
- To increase the percentage of adult hospitalized surgical patients (18 years and older) receiving appropriate pharmacological and/or mechanical prophylaxis
- To reduce the number of adult surgical patients (18 years and older) with all-cause in-hospital mortality

TARGET POPULATION

Adult (18 years and older) hospitalized patients who are undergoing surgical procedures such as major open abdominal or urologic surgery, cranial and spinal neurosurgical procedures, open gynecologic procedures, lower extremity joint replacement and hip fracture repair, or have trauma that is associated with increased risk for venous thromboembolism.

INTERVENTIONS AND PRACTICES CONSIDERED

1. Assessment of venous thromboembolism (VTE) risk including procedure-related risk and patient related risk
2. VTE prophylaxis for low-risk patients including patient education and early ambulation
3. VTE prophylaxis for moderate- and high-risk patients including patient education, early ambulation, elastic stockings, intermittent pneumatic compression (IPC) if immobilized, and anticoagulant prophylaxis (low-dose unfractionated heparin [LDUH] and low molecular weight heparin [LMWH - enoxaparin and dalteparin]) unless contraindicated.

   Note: Aspirin is not recommended.

4. VTE prophylaxis for very high-risk patients including patient education, early ambulation, elastic stockings, intermittent pneumatic compression if immobilized, and anticoagulant prophylaxis (low molecular weight heparin, fondaparinux, and adjusted dose of warfarin)

Note: Aspirin and low-dose unfractionated heparin are not recommended.

5. Assessment of the need for post-discharge anticoagulation

MAJOR OUTCOMES CONSIDERED

- Incidence and prevalence of venous thromboembolism in hospitalized patients undergoing procedures or suffering significant trauma
- Rate of thromboembolic events including pulmonary embolism in patients on low molecular weight heparin (LMWH) versus low dose unfractionated heparin (LDUH)
- Rate of perioperative death in patients on LMWH versus LDUH
- Rate of intraoperative and postoperative bleeding (major and minor) in patients on LMWH versus LDUH

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Key conclusions (as determined by the work group) are supported by a conclusion grading worksheet that summarizes the important studies pertaining to the conclusion. Individual studies are classed according to the system presented below, and are designated as positive, negative, or neutral to reflect the study quality.

Conclusion Grades:

Grade I: The evidence consists of results from studies of strong design for answering the question addressed. The results are both clinically important and consistent with minor exceptions at most. The results are free of any significant doubts about generalizability, bias, and flaws in research design. Studies with negative results have sufficiently large samples to have adequate statistical power.

Grade II: The evidence consists of results from studies of strong design for answering the question addressed, but there is some uncertainty attached to the conclusion because of inconsistencies among the results from the studies or because of minor doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from weaker designs for the question addressed, but the results have been confirmed in separate studies and are consistent with minor exceptions at most.

Grade III: The evidence consists of results from studies of strong design for answering the question addressed, but there is substantial uncertainty attached to the conclusion because of inconsistencies among the results of different studies or because of serious doubts about generalizability, bias, design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from a limited number of studies of weak design for answering the question addressed.

Grade Not Assignable: There is no evidence available that directly supports or refutes the conclusion.

Study Quality Designations:

The quality of the primary research reports and systematic reviews are designated in the following ways on the conclusion grading worksheets:

Positive: indicates that the report or review has clearly addressed issues of inclusion/exclusion, bias, generalizability, and data collection and analysis.

Negative: indicates that these issues (inclusion/exclusion, bias, generalizability, and data collection and analysis) have not been adequately addressed.

Neutral: indicates that the report or review is neither exceptionally strong nor exceptionally weak.

Not Applicable: indicates that the report is not a primary reference or a systematic review and therefore the quality has not been assessed.

Classes of Research Reports:

A. Primary Reports of New Data Collection:

Class A:

- Randomized, controlled trial

Class B:

- Cohort study

Class C:

- Non-randomized trial with concurrent or historical controls

- Case-control study
- Study of sensitivity and specificity of a diagnostic test
- Population-based descriptive study

Class D:

- Cross-sectional study
- Case series
- Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness analysis

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

The guideline developers reviewed published cost analyses.

METHOD OF GUIDELINE VALIDATION

Clinical Validation-Pilot Testing
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Institute Partners: System-Wide Review

The guideline annotation, discussion, and measurement specification documents undergo thorough review. Written comments are solicited from clinical, measurement, and management experts from within the member groups during an eight-week review period.

Each of the Institute's participating member groups determines its own process for distributing the guideline and obtaining feedback. Clinicians are asked to suggest modifications based on their understanding of the clinical literature coupled with their clinical expertise. Representatives from all departments involved in implementation and measurement review the guideline to determine its operational impact. Measurement specifications for selected measures are developed by the Institute for Clinical Systems Improvement (ICSI) in collaboration with participating member groups following implementation of the guideline. The specifications suggest approaches to operationalizing the measure.

Guideline Work Group

Following the completion of the review period, the guideline work group meets 1 to 2 times to review the input received. The original guideline is revised as necessary, and a written response is prepared to address each of the responses received from member groups. Two members of the Cardiovascular Steering Committee carefully review the input, the work group responses, and the revised draft of the guideline. They report to the entire committee their assessment of four questions: (1) Is there consensus among all ICSI member groups and hospitals on the content of the guideline document? (2) Has the drafting work group answered all criticisms reasonably from the member groups? (3) Within the knowledge of the appointed reviewer, is the evidence cited in the document current and not out-of-date? (4) Is the document sufficiently similar to the prior edition that a more thorough review (critical review) is not needed by the member group? The committee then either approves the guideline for release as submitted or negotiates changes with the work group representative present at the meeting.

Pilot Test

Member groups may introduce the guideline at pilot sites, providing training to the clinical staff and incorporating it into the organization's scheduling, computer, and other practice systems. Evaluation and assessment occur throughout the pilot test phase, which usually lasts for three-six months. At the end of the pilot test phase, ICSI staff and the leader of the work group conduct an interview with the member groups participating in the pilot test phase to review their experience and gather comments, suggestions, and implementation tools.

The guideline work group meets to review the pilot sites' experiences and makes the necessary revisions to the guideline, and the Cardiovascular Steering Committee reviews the revised guideline and approves it for release.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The recommendations for venous thromboembolism (VTE) prophylaxis for surgical and trauma patients are presented in the form of an algorithm with 8 components, accompanied by detailed annotations. An algorithm is provided for Venous Thromboembolism Prophylaxis for Hospitalized Surgical/Trauma Patients; clinical highlights and selected annotations (numbered to correspond with the algorithm) follow.

Class of evidence (A-D, M, R, X) and conclusion grade (I-III, Not Assignable) definitions are provided at the end of the "Major Recommendations" field.

Clinical Highlights

1. All patients should receive proper education regarding VTE risk, signs and symptoms of VTE, and prophylaxis methods available. (Annotations #4, 6, 8)
2. Early ambulation should be encouraged when possible in all patient groups. (Annotations #4, 6, 8)
3. Anticoagulant prophylaxis should be used in all moderate/high and very high-risk VTE patients, unless contraindicated. (Annotations #6, 8)
4. Aspirin is not recommended for VTE prophylaxis because other methods are more effective. (Annotations #6, 8)
5. For all patients receiving spinal or epidural anesthesia, precautions should be taken when using anticoagulant prophylaxis to reduce the risk of epidural hematoma. (Annotations #6, 8)
6. Risk of VTE development continues beyond hospitalization, and the need for post-discharge anticoagulation should be assessed. (Annotations #6, 8)

Venous Thromboembolism Prophylaxis for Hospitalized Surgical/Trauma Patients Algorithm Annotations

1. Surgical Procedure/Trauma

   All patients admitted for trauma or to undergo procedures should be evaluated for risk of VTE development. Appropriate prophylaxis measures should be initiated for patients deemed to be at risk.

   Evidence supporting this recommendation is of class: R

2. Assess VTE Risk

   Patients undergoing surgical procedures have VTE risks associated with the procedure such as site, technique, duration, type of anesthesia, complications (infection, shock, etc.), and degree of immobilization. Procedures that are considered high-risk include major open abdominal or urologic surgery,

cranial and spinal neurosurgical procedures, and open gynecologic procedures. Lower extremity joint replacement and hip fracture repair are considered very high VTE risk in themselves.

Patients with trauma have VTE risks dependent on location and severity. Patients with multi-system, spinal cord, or lower extremity blunt trauma appear to be at very high-risk.

Preexisting patient VTE risk factors, such as previous VTE history, presence of cancer, paralysis, congestive heart failure, obesity, hormone therapy, pregnancy, or acquired or congenital thrombophilia, play an additive role.

4. Prophylaxis Plan for Low VTE Risk

Patients with a low-risk of developing a VTE (See Annotation Appendix A, "Patient Related Risk Factors and Guide to Risk Stratification" in the original guideline document for low VTE risk definition) should receive patient education and early ambulation. Patient education should encourage early and frequent ambulation and flexion/extension exercises for the ankles. No specific measures are required beyond this.

5. Moderate/High VTE Risk

Moderate-risk patients include those less than age 40 with additional risk factors, those who are age 40 to 60 without additional risk factors and/or non-major surgery, and those less than 40 years of age undergoing major surgery. See Annotation Appendix A, "Patient Related Risk Factors and Guide to Risk Stratification" in the original guideline document.

High VTE Risk

High VTE risk patients include non-major surgery in patients over age 60 or major surgery in patients over 40 years of age. Additional patient related risk factors may place younger patients and/or those with more minor procedures into the high-risk category. (See Annotation Appendix A, "Patient Related Risk Factors and Guide to Risk Stratification" in the original guideline).

All high VTE risk patients should receive patient education, early ambulation, elastic support stockings, intermittent pneumatic compression if immobilized, and anticoagulant prophylaxis unless contraindicated. For short term prophylactic anticoagulation there are relatively few conditions with excessive bleeding risk or other considerations that would contraindicate anticoagulation. See Annotation Appendix B, "Guide to Anticoagulant Prophylaxis Use in Special Circumstances" in the original guideline. Acceptable anticoagulation regimens include low-dose unfractionated heparin (LDUH) and low molecular weight heparin (LMWH). Aspirin is not recommended.

Refer to the table in Annotation #5 of the original guideline document for details on pharmacotherapy for patients stratified to High VTE risk.

Supportive statements for pharmacotherapy of High VTE Risk patients:

1. For most general surgery patients, LDUH remains the agent of choice. LMWH has been found to be as safe and effective yet remains significantly more expensive.
2. In general surgery, patients may receive preoperative heparin without increased risk of bleeding.
3. LMWHs cause less heparin-induced thrombocytopenia than LDUH.
4. There is some evidence that LMWH may need to be adjusted at prophylactic doses in severe renal impairment (Creatinine clearance <30 mL/minute).
5. In gynecologic surgery, evidence is strongest to support use of LDUH. For patients with malignancy, a regimen of every 8h dosing should be maintained.

Evidence supporting this recommendation is of classes: A, B, D, R

6. Prophylaxis Plan for Moderate/High VTE Risk

Moderate VTE Risk

Patients with a moderate-risk of developing a VTE should receive patient education, early ambulation, elastic support stockings, intermittent pneumatic compression if immobilized, and anticoagulant prophylaxis. Acceptable anticoagulant regimens are started 1 to 2 hours prior to surgery and include LDUH subcutaneously every 12 hours or LMWH (enoxaparin and dalteparin.) For general surgery, non-orthopedic patients aspirin is not recommended.

LDUH is cost effective and effective in reducing the risk of postoperative VTE in moderate-risk patients. While LMWH has the convenience of single day dosing, it is not superior to LDUH and is significantly more expensive. Further, overall complication rates appear similar between LDUH and LMWH. See the Discussion and References section in the original guideline document for more information.

Studies, primarily in patients over 40 years of age, have shown that LDUH is as effective as LMWH as an anticoagulant prophylaxis agent for moderate and high-risk surgical patients. [Conclusion Grade I: See Discussion Appendix A, Conclusion Grading Worksheet — Annotation #6 (Selecting Heparin) in the original guideline]

In moderate-risk patients with contraindications to pharmacologic prophylaxis, elastic stockings and intermittent pneumatic compression may be considered an alternative to LDUH, bearing in mind that there is less data to support this strategy, that hemorrhagic complications are low with both strategies, and that compliance may be a significant problem when relying on intermittent pneumatic compression alone for VTE prophylaxis. For short-term prophylactic anticoagulation, there are relatively few conditions associated with an excessive risk of bleeding or other significant considerations. When an epidural is used for anesthesia, it is most appropriate to wait until the catheter is removed before starting pharmacologic prophylaxis. See Annotation Appendix B, "Guide to Anticoagulant Prophylaxis Use in Special Circumstances" in the original guideline document.

Evidence supporting this recommendation is of classes: A, B, C, D, M, R

8. Prophylaxis plan for Very High VTE Risk

All very high VTE risk patients (See Annotation Appendix A, "Patient Related Risk Factors and Guide to Risk Stratification" in the original guideline document for very high VTE risk definition) should receive patient education, early ambulation, elastic support stockings, intermittent pneumatic compression if immobilized, and anticoagulation prophylaxis unless contraindicated. For short-term prophylactic anticoagulation, there are relatively few conditions with excessive bleeding risk or other considerations that would contraindicate anticoagulation. See Annotation Appendix B, "Guide to Anticoagulant Prophylaxis Use in Special Circumstances" in the original guideline document. Acceptable anticoagulation regimens include LMWH, fondaparinux, and adjusted dose warfarin to keep the international normalized ratio (INR) between 2.0 and 3.0. Aspirin and LDUH are not recommended. Consideration should be given to extending the period of anticoagulation prophylaxis beyond hospitalization, depending on the length of hospital stay. If anticoagulation is contraindicated, placement of an inferior vena cava filter should be considered in this patient group.

Refer to the table in Annotation #8 of the original guideline document for details on pharmacotherapy for patients stratified to Very High-risk of VTE.

Supportive comments for pharmacotherapy of patients at Very High VTE Risk:

1. Warfarin is contraindicated in the first trimester of pregnancy. Refer to the Institute for Clinical systems Improvement (ICSI) Anticoagulation Therapy Supplement for further dosing information.
2. Warfarin alone without concomitant heparin has been shown effective in prevention of venous thromboembolism for patients requiring hip replacement surgery.
3. In patients who have undergone total knee replacement, total hip replacement, and hip fracture repair, a minimum of 7 to 10 days of anticoagulation prophylaxis is recommended. Longer prophylaxis (30-50 days) is recommended for patients with continued risk (e.g., history of deep vein thrombosis, immobilization).
4. Dalteparin and Enoxaparin are started 12 to 24 hours post-op depending on physician determination of adequate hemostasis.
5. Fondaparinux is the only anticoagulant with a Federal Drug Administration (FDA)-approved indication for hip fracture.
6. Aspirin and LDUH are not recommended for very high-risk patients.
7. For trauma patients, contraindications to early pharmacotherapy include intracranial bleeding, incomplete spinal cord injury, ongoing, uncontrolled bleeding, and uncorrected coagulopathy.

Evidence supporting this recommendation is of classes: A, B, C, D, R

Definitions

Conclusion Grades:

Grade I: The evidence consists of results from studies of strong design for answering the question addressed. The results are both clinically important and consistent with minor exceptions at most. The results are free of any significant doubts about generalizability, bias, and flaws in research design. Studies with negative results have sufficiently large samples to have adequate statistical power.

Grade II: The evidence consists of results from studies of strong design for answering the question addressed, but there is some uncertainty attached to the conclusion because of inconsistencies among the results from the studies or because of minor doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from weaker designs for the question addressed, but the results have been confirmed in separate studies and are consistent with minor exceptions at most.

Grade III: The evidence consists of results from studies of strong design for answering the question addressed, but there is substantial uncertainty attached to the conclusion because of inconsistencies among the results of different studies or because of serious doubts about generalizability, bias, design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from a limited number of studies of weak design for answering the question addressed.

Grade Not Assignable: There is no evidence available that directly supports or refutes the conclusion.

Classes of Research Reports:

A. Primary Reports of New Data Collection:

   Class A:

   - Randomized, controlled trial

   Class B:

   - Cohort study

   Class C:

   - Non-randomized trial with concurrent or historical controls
   - Case-control study
   - Study of sensitivity and specificity of a diagnostic test
   - Population-based descriptive study

   Class D:

   - Cross-sectional study
   - Case series
   - Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness analysis

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

CLINICAL ALGORITHM(S)

A detailed and annotated clinical algorithm is provided for Venous Thromboembolism Prophylaxis for Surgical/Trauma Patients.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The guideline contains an annotated bibliography and discussion of the evidence supporting each recommendation. The type of supporting evidence is classified for selected recommendations (see "Major Recommendations").

In addition, key conclusions contained in the Work Group's algorithm are supported by a grading worksheet that summarizes the important studies pertaining to the conclusion. The type and quality of the evidence supporting these key recommendations (i.e., choice among alternative therapeutic approaches) is graded for each study.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Overall Benefits

- Appropriate screening for venous thromboembolism risk
- Increased rate of adult hospitalized patients receiving appropriate pharmacological and/or mechanical prophylaxis
- Reduced rate of adult surgical patients with all-cause in-hospital mortality

Specific Benefits

- Low-dose unfractionated heparin is cost effective and effective in reducing the risk of post-operative venous thromboembolism (VTE).
- Low molecular weight heparin has the convenience of single day dosing.
- Warfarin alone without concomitant heparin has been shown effective in prevention of VTE for patients requiring hip replacement surgery.
- Anticoagulant regimens reduce compliance issues and have been shown to reduce the incidence of post-operative VTE.
- Elastic stockings, intermittent pneumatic compression devices, and foot pumps have been shown to be effective in VTE prophylaxis.

POTENTIAL HARMS

Side Effects of Anticoagulant Medications (Low Dose Unfractionated Heparin [LDUH] and Low Molecular Weight Heparin [LMWH])

- Bleeding (major and minor)
- Heparin-induced thrombocytopenia (LMWH causes less heparin-induced thrombocytopenia than LDUH)

Side Effects of Mechanical Methods of Venous Thromboembolic Prophylaxis

- Side effects of elastic stockings are rare, although a proper fit, particularly in the obese, may be difficult in 10 to 15% of patients.
- Complications with intermittent pneumatic compression devices include perineal neuropathy and compartment syndrome with lithotomy position and weight loss as risk factors. Compliance may also be significantly more difficult than with heparin regimens.

Subgroups Most Likely to be Harmed

There is some evidence that LMWH may need to be adjusted at prophylactic doses in severe renal impairment (Creatinine clearance <30 mL/minute).

Refer to Annotation Appendix B in the original guideline document "Guide to Anticoagulation Prophylaxis Use in Special Circumstances - Neuraxial Blockade".

CONTRAINDICATIONS

CONTRAINDICATIONS

For trauma patients, contraindications to early pharmacotherapy include intracranial bleeding; incomplete spinal cord injury; ongoing, uncontrolled bleeding; and uncorrected coagulopathy

Contraindications to warfarin include the first trimester of pregnancy.

Relative contraindications to anticoagulant prophylaxis:

- Thrombocytopenia

- Coagulopathy/known coagulation defects
- Recent hemorrhagic stroke
- Recent intracranial or intraocular surgery
- Significant traumatic intracranial hemorrhage
- Patients on thrombolytic medications
- Renal insufficiency (creatinine clearance <30 ml/minute)

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- These clinical guidelines are designed to assist clinicians by providing an analytical framework for the evaluation and treatment of patients and are not intended either to replace a clinician's judgment or to establish a protocol for all patients with a particular condition. A guideline will rarely establish the only approach to a problem.
- This clinical guideline should not be construed as medical advice or medical opinion related to any specific facts or circumstances. Patients are urged to consult a health care professional regarding their own situation and any specific medical questions they may have.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Once a guideline is approved for release, a member group can choose to concentrate on the implementation of that guideline. When four or more groups choose the same guideline to implement and they wish to collaborate with others, they may form an action group.

In the action group, each medical group sets specific goals they plan to achieve in improving patient care based on the particular guideline(s). Each medical group shares its experiences and supporting measurement results within the action group. This sharing facilitates a collaborative learning environment. Action group learnings are also documented and shared with interested medical groups within the collaborative.

Currently, action groups may focus on one guideline or a set of guidelines such as hypertension, lipid treatment, and tobacco cessation.

The following detailed measurement strategies are presented to help close the gap between clinical practice and the guideline recommendations.

Priority Aims and Suggested Measures for Health Care Systems

1. Increase the percentage of adult hospitalized surgical patients (18 years and older) who are appropriately screened for venous thromboembolism (VTE) risk.

   Possible measure for accomplishing this aim:

a. Percentage of adult hospitalized surgical patients (18 years and older) who have a VTE assessment documented in their chart

2. Increase the percentage of adult hospitalized surgical patients (18 years and older) receiving appropriate pharmacological and/or mechanical prophylaxis.

   Possible measure for accomplishing this aim:

   a. Percentage of patients identified as moderate, high, or very high-risk for VTE who have received appropriate prophylaxis as defined by the guideline

3. Reduce the number of adult surgical patients (18 years and older) with all-cause in-hospital mortality.

   Possible measure for accomplishing this aim:

   a. Percentage of patients with all-cause in-hospital mortality

Systems Approaches to Implementation for this Guideline

1. Medical groups and hospitals are encouraged to develop a formal strategy that addresses the prevention of thromboembolic complications.
2. Medical groups and hospitals are encouraged to develop systems that support:
   - early identification of patients at risk for VTE development (possibly through use of order sets or similar tools)
   - appropriate prophylaxis initiation (possibly through order sets and/or anticoagulation protocols)
   - patient education to include documentation of the patient's own awareness of their risk for VTE, signs and symptoms of VTE and when/how to seek treatment, and demonstrated understanding of the prescribed anticoagulation regimen

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Venous thromboembolism prophylaxis for surgical/trauma patients. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2003 Oct. 39 p. [115 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2003 Oct

GUIDELINE DEVELOPER(S)

Institute for Clinical Systems Improvement - Private Nonprofit Organization

GUIDELINE DEVELOPER COMMENT

Organizations participating in the Institute for Clinical Systems Improvement (ICSI): Affiliated Community Medical Centers, Allina Medical Clinic, Altru Health System, Aspen Medical Group, Avera Health, CentraCare, Columbia Park Medical Group, Community-University Health Care Center, Dakota Clinic, ENT Specialty Care, Fairview Health Services, Family HealthServices Minnesota, Family Practice Medical Center, Gateway Family Health Clinic, Gillette Children's Specialty Healthcare, Grand Itasca Clinic and Hospital, HealthEast Care System, HealthPartners Central Minnesota Clinics, HealthPartners Medical Group and Clinics, Hutchinson Area Health Care, Hutchinson Medical Center, Lakeview Clinic, Mayo Clinic, Mercy Hospital and Health Care Center, MeritCare, Mille Lacs Health System, Minnesota Gastroenterology, Montevideo Clinic, North Clinic, North Memorial Care System, North Suburban Family Physicians, Northwest Family Physicians, Olmsted Medical Center, Park Nicollet Health Services, Pilot City Health Center, Quello Clinic, Ridgeview Medical Center, River Falls Medical Clinic, Saint Mary's/Duluth Clinic Health System, St. Paul Heart Clinic, Sioux Valley Hospitals and Health System, Southside Community Health Services, Stillwater Medical Group, SuperiorHealth Medical Group, University of Minnesota Physicians, Winona Clinic, Ltd., Winona Health

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SOURCE(S) OF FUNDING

The following Minnesota health plans provide direct financial support: Blue Cross and Blue Shield of Minnesota, HealthPartners, Medica, Metropolitan Health Plan, PreferredOne and UCare Minnesota. In-kind support is provided by the Institute for Clinical Systems Improvement's (ICSI) members.

GUIDELINE COMMITTEE

Cardiovascular Steering Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Work Group Members: Bruce Burnett, MD (Work Group Leader) (Park Nicollet Health Services) (Internal Medicine); Rick Wehseler, MD (Affiliated Community Medical Centers) (Family Practice); Peter Kernahan, MD (HealthPartners Medical Group) (General Surgery); John Heit, MD (Mayo Clinic) (Hematology); Mark Monson, MD (St Mary's/Duluth Clinic Health System) (Internal Medicine); Mark Morrow, MD (Aspen Medical Group) (Internal Medicine); Paul Johnson, MD (Park Nicollet Health Services) (Orthopedic Surgery); Sherri Jobin, PharmD (HealthEast Care System) (Pharmacy); Jill Strykowski, RPh, MS (Park Nicollet Health Services) (Pharmacy); Beth Green, MBA, RRT (Institute for Clinical Systems Improvement) (Implementation/Measurement Advisor); Nancy Greer, PhD (Institute for Clinical Systems Improvement) (Evidence Analyst); Sherri Huber, MT (ASCP) (Institute for Clinical Systems Improvement) (Facilitator)

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

In the interest of full disclosure, Institute for Clinical Systems Improvement (ICSI) has adopted the policy of revealing relationships work group members have with companies that sell products or services that are relevant to this guideline topic. The reader should not assume that these financial interests will have an adverse impact on the content of the guideline, but they are noted here to fully inform users. Readers of the guideline may assume that only work group members listed below have potential conflicts of interest to disclose.

John Heit receives grant support from Aventis, Astra Zeneca.

Bruce Burnett is a member of the speakers bureau for Astra Zeneca, Aventis, Bristol Myers Squibb.

Jill Strykowski received honoraria from Aventis.

No other work group members have potential conflicts of interest to disclose.

ICSI's conflict of interest policy and procedures are available for review on ICSI's website at www.icsi.org.

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Institute for Clinical Systems Improvement (ICSI) Web site.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on April 29, 2004.

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Date Modified: 11/8/2004